

INFORMATION DISCLOSURE STATEMENT	Attorney Docket	IRVN-009CON
Address to:	First Named Inventor	KEIRSTEAD, HANS S.
Mail Stop: Patent Application Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	Application Number	Not Yet Assigned
	Confirmation No.	Not Yet Assigned
	Filing Date	Herewith
	Group Art Unit	Not Yet Assigned
	Examiner Name	Not Yet Assigned
	Title:	"OLIGODENDROCYTES DERIVED FROM HUMAN EMBRYONIC STEM CELLS FOR REMYELINATION AND TREATMENT OF SPINAL CORD INJURY"

Sir:

This is an Information Disclosure Statement submitted for the Examiner's consideration. A Form PTO-SB/08A listing the references and copies of the cited references accompany this paper. Applicants would appreciate the Examiner's initialing and returning the form to indicate that the references have been reviewed and made of record.

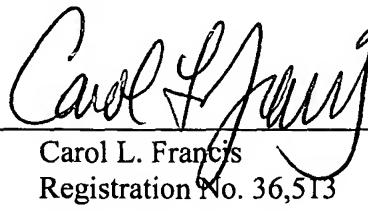
All of the references identified herein were disclosed in parent application serial number 10/406,817, filed 4/4/2003 and as such, copies thereof are not included pursuant to the provisions of 37 CFR § 1.98(d).

This Information Disclosure Statement is not intended as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that any one of the above references constitutes prior art to the present application within the meaning of 35 U.S.C. §102.

As applicants have not yet received a first Action on the merits, no fee is believed to be required for filing this Disclosure Statement. If, however, the PTO finds that for some reason a fee is due, our Deposit Account No. 50-0815, Order No. IRVN-009CON may be charged thereon.

Respectfully submitted,
BOZICEVIC, FIELD & FRANCIS LLP

Date: Sept 12, 2003

By: 
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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				Complete if Known	
Sheet	1	of	4	Application Number	To Be Assigned
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U.S. PATENT DOCUMENTS						
Examiner Initials'	Cite No. ¹	U.S. Patent Documents		Name of Patentee or Applicant of Cited Documents	Date of Publication of Cited Document MM-DD-YYYY	Pages, columns, lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
		5,654,183		Anderson, et al.	08-05-1997	
		5,753,506		John	05-19-1998	
		5,830,621		Suzuki, et al.	11-03-1998	
		5,830,651		Cauley, et al.	11-03-1998	
		5,849,553		Anderson, et al.	12-15-1998	
		5,851,832		Weiss, et al.	12-22-1998	
		5,968,829		Carpenter	10-19-1999	
		6,090,622		Gearhart, et al.	07-18-2000	
		6,200,806		Thomson	03-13-2001	
		6,235,537		North, et al.	05-22-2001	
		6,238,922		Uchida	05-29-2001	
		6,245,564		Goldman, et al.	06-12-2001	

FOREIGN PATENT DOCUMENTS								
Examiner Initials'	Cite No. ¹	Foreign Patent Documents			Name of Patentee or Applicant of Cited Documents	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		Office ³	Number ⁴	Kind Code ⁵ (if known)				
			2,253,078		Steeves	10-28-1998		
			WO 97/07200		Barres	02-27-1997		
			WO 97/32608		McKinnon	02-28-1997		
			WO 98/50526		Rao, et al.	11-12-1998		
			WO 99/01159		Rao, et al.	01-14-1999		
			WO 99/20741		Bodnar, et al.	04-29-1999		
			WO 00/23571		Goldman, et al.	04-27-2000		
			WO 01/28342		PCT	04-26-2001		
			WO 01/51610		Long, et al.	07-19-2001		
			WO 01/68815		Pera, et al.	09-20-2001		
			WO 01/88104		Carpenter	11-22-2001		

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			WO 01/98463		Pera	12-27-2001	
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OTHER PRIOR ART—NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
		ARSENJEVIC, et al. "Isolation of multipotent neural precursors residing in the cortex of the adult human brain", <i>Exp. Neuro.</i> , (2001) Vol. 170: 48-62.	
		BAIN, et al. "Neuron-like cells derived in culture from P19 embryonal carcinoma and embryonic stem cells", <i>Article</i> , pp. 1-13.	
		BARRES, et al. "A novel role from thyroid hormone, glucocorticoids and retinoic acid in timing oligodendrocyte development", <i>Development</i> , (1994) Vol. 120: 1097-1108.	
		BLAKEMORE, et al. "The origin of remyelinating cells in the central nervous system", <i>J. Neuroimmunology</i> , (1999) Vol. 98: 69-76.	
		BOTTENSTIEN. "Growth requirements in vitro of oligodendrocyte cell lines and neonatal rat brain oligodendrocytes", <i>Proc. Natl. Acad. Sci. USA</i> , (1986) Vol. 83(6): 1955-1959.	
		BRÜSTLE, et al. " <i>In vitro</i> -generated neural precursors participate in mammalian brain development", <i>Proc. Natl. Acad. Sci. USA</i> , (1997) Vol. 94: 14809-14814.	
		BRÜSTLE, et al. "Embryonic stem cell-derived glial precursors: A source of myelinating transplants", <i>Science</i> , (1999) Vol. 285: 754-756.	
		CARPENTER, et al. "Dopaminergic neurons and proliferation-competent precursor cells for treating Parkinson's disease", <i>Int'l Patent Application PCT/US02/19477</i> .	
		CHANDROSS, et al. "Tracking oligodendrocytes during development and regeneration", <i>Microsci. Res. Tech.</i> , (2001) Vol. 52(6): 766-777.	
		CHEN, et al. "Gene transfer and expression in oligodendrocytes under the control of myelin basic protein transcriptional control region mediated by adeno-associated virus", <i>Gene Ther.</i> , (1998) Vol. 5(1): 50-58.	
		ECCLESTON, et al. "The differentiation of oligodendrocytes in a serum-free hormone-supplemented medium", <i>Brain Res.</i> , (1984) Vol. 318(1): 1-9.	
		FRAICHARD, et al. "In vitro differentiation of embryonic stem cells into glial cells and functional neurons", <i>J. Cell Sci.</i> , (1995) Vol. 108: 3181-3188.	
		GOTTLIEB, et al. "An in vitro pathway from embryonic stem cells to neurons and glia", <i>Cells Tissues Organs</i> , (1999) Vol. 165(3-4): 165-172.	
		GU, et al. "Selenium is required for normal upregulation of myelin genes in differentiating oligodendrocytes", <i>J. Neurosci. Res.</i> , (1997) Vol. 47(6): 626-635.	

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	GUAN, et al. "Embryonic stem cell-derived neurogenesis. Retinoic acid induction and lineage selection of neuronal cells", <i>Cell Tissue Res.</i> , (2001) Vol. 305(2): 171-176.
	HINKS, et al. "Depletion of endogenous oligodendrocyte progenitors rather than increased availability of survival factors is a likely explanation for enhanced survival of transplanted oligodendrocyte progenitors in X-irradiated compared to normal CNS", <i>Neuropath. Appl. Neurobio.</i> , (2001) Vol. 27: 59-67.
	HOLLAND, "Gliomagenesis: Genetic alterations and mouse models", <i>Nat. Rev. Genet.</i> , (2001) Vol. 2(2): 120-129.
	KEIRSTEAD, et al. "In vivo immunological suppression of spinal cord myelin development", <i>Brain Res. Bulletin</i> , (1997) Vol. 44(6): 727-734.
	KEIRSTEAD, et al. "Identification of post-mitotic oligodendrocytes incapable of remyelination within the demyelinated adult spinal cord", <i>J. Neuropath. Exp. Neurology</i> , (1997) Vol. 56(11): 1191-1201.
	KEIRSTEAD, et al. "A quantifiable model of axonal regeneration in the demyelinated adult rat spinal cord", <i>Exp. Neurol.</i> , (1998) Vol. 151: 303-313.
	KEIRSTEAD, et al. "Response of the oligodendrocyte progenitor cell population (defined by NG2 labelling) to demyelination of the adult spinal cord", <i>GLIA</i> , (1998) Vol. 22: 161-170.
	KEIRSTEAD, et al. "The role of oligodendrocytes and oligodendrocyte progenitors in CNS remyelination", <i>Adv. Exp. Med. Biol.</i> , (1999) Vol. 468: 183-197.
	KEIRSTEAD, et al. "Polysialylated neural cell adhesion molecule-positive CNS precursors generate both oligodendrocytes and schwann cells to remyelinate the CNS after transplantation", <i>J. Neurosci.</i> , (1999) Vol. 19(17): 7529-7536.
	KEIRSTEAD. "Stem cell transplantation into the central nervous system and the control of differentiation", <i>J. Neurosci. Res.</i> , (2001) Vol. 63: 233-236.
	KORNBLUM, et al. "Molecular markers in CNS stem cell research: Hitting a moving target", <i>Nature Reviews</i> , (2001) Vol. 2: 843-846.
	LEE, et al. "Efficient generation of midbrain and hindbrain neurons from mouse embryonic stem cells", <i>Nature Biotech.</i> , (2000) Vol. 18: 675-678.
	LI, et al. "Generation of purified neural precursors from embryonic stem cells by lineage selection", <i>Curr. Bio.</i> , (1998) Vol. 8: 971-974.
	LIU, et al. "Embryonic stem cells differentiate into oligodendrocytes and myelinate in culture and after spinal cord transplantation", <i>Proc. Natl. Acad. Sci. USA</i> , (2000) Vol. 97(11): 6126-6131.
	MCDONALD, et al. "Transplanted embryonic stem cells survive, differentiate and promote recovery in injured rat spinal cord", <i>Nature Med.</i> , (1999) Vol. 5(12): 1410-1412.
	MUJTABA, et al. "Lineage-restricted neural precursors can be isolated from both the mouse neural tube and cultured ES cells", <i>Dev. Bio.</i> , (1999) Vol. 214: 113-127.

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	O'SHEA. "Neuronal differentiation of mouse embryonic stem cells: Lineage selection and forced differentiation paradigms", <i>Blood Cells, Molecules and Diseases</i> , (2001) Vol. 27(3): 705-712.	
	OSTENFELD, et al. "Regional specification of rodent and human neurospheres", <i>Brain Res. Dev. Brain Res.</i> , (2002) Vol. 134(1-2): 43-55.	
	PARDO, et al. "Differentiation of rat striatal embryonic stem cells in vitro: Monolayer culture vs. three-dimensional coculture with differentiated brain cells", <i>J. Neurosci. Res.</i> , (2000) Vol. 59(4): 504-512.	
	PARK, et al. "Transplantation of neural progenitor and stem cells: Developmental insights may suggest new therapies for spinal cord and other CNS dysfunction", <i>J. Neurotrauma</i> , (1999) Vol. 16(8): 675-687.	
	REUBINOFF, et al. "Neural progenitors from human embryonic stem cells", <i>Nat. Biotechnol.</i> , (2001) Vol. 19(12): 1134-1140.	
	SCOLDING, et al. "Oligodendrocyte progenitors are present in the normal adult human CNS and in the lesions of multiple sclerosis", <i>Brain</i> , (1998) Vol. 121: 2221-2228.	
	SCOLDING, et al. "Identification of A2B5-positive putative oligodendrocyte progenitor cells and A2B5-positive astrocytes in adult human white matter", <i>Neuroscience</i> , (1999) Vol. 89(1): 1-4.	
	SVENDSEN, et al. "A new method for the rapid and long term growth of human neural precursor cells", <i>J. Neurosci. Meth.</i> , (1998) Vol. 85: 141-152.	
	THOMSON, et al. "Neural differentiation of rhesus embryonic stem cells", <i>APMIS</i> , (1998) Vol. 106: 149-157.	
	THOMSON, et al. "Embryonic Stem Cell Lines Derived From Human Blastocysts" <i>Science</i> , (1998) Vol. 282 (5391):1145.	
	XU, et al. "Feeder-free growth of undifferentiated human embryonic stem cells", <i>Biotechnol.</i> , (2001) Vol. 19: 971-974.	
	ZHANG, et al. " <i>In vitro</i> differentiation of transplantable neural precursors from human embryonic stem cells", <i>Nature Biotech.</i> , (2001) Vol. 19: 1129-1133.	

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